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10/509,578	03/28/2005	Keiji Yamada	258759US0PCT	2433

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EXAMINER	
YOUNG, NATASHA E	
ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/509,578	YAMADA, KEIJI	
	Examiner	Art Unit	
	NATASHA YOUNG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *17 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☒ Claim(s) *11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/29/2008, 11/03/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 11 is objected to because of the following informalities: The word "grater" should be "greater" (see line 5). Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 5, and 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al (EP 1 142 619 A1) in view of Noda et al (US 6,395,370 B1) and admitted prior art.

Regarding claim 1, Ohno et al discloses a honeycomb filter (29, 39) or purifying exhaust gases (see Abstract and figures 8 and 13), comprising: a ceramic block

comprising a plurality of columnar porous ceramic members (F10, F1) combined with one another by a sealing material layer (15), each of the rectangular columnar porous ceramic members having a plurality of through holes (12) extending parallel with one another in a length direction of the ceramic block and separated by a partition wall (13) interposed between the through holes; a circumferential sealing material layer (16) is also formed on a circumference portion of said ceramic block (ceramic filter assembly), wherein said partition wall (13) functions as a filter for collecting particulates (see Abstract and paragraph 0025), and on a cross section perpendicular to the length direction of said ceramic block (where four of the ceramic members meet), said sealing material layer at least one crisscross portion in portion (see Abstract and figure 8).

Ohno et al does not explicitly disclose the maximum width L of the crisscross portion of said sealing material layer is 1.5 to 3 times greater than the minimum width l of said sealing material layer.

However, Ohno et al discloses a honeycomb filter capable of meeting the limitation of the maximum width L of the crisscross portion of said sealing material layer is 1.5 to 3 times greater than the minimum width l of said sealing material layer (see paragraphs 0022, 0045, 0079, and 0082-0083).

Additionally, Noda et al discloses a ceramic structure obtained by combining a plurality of sintered ceramic material segments (3a, 3b) in which ceramic structure thermal impacting-relieving zones (5a, 5b) capable of releasing the thermal impact applied are provided between the segments (3a, 3b) and the widths of the thermal impact-relieving zone (5a, 5b) in the sectional direction of the ceramic structure are

various (see Abstract and figures 1-3 and 4a-c) and the thermal impact-relieving zones have a plurality of widths (see column 2, lines 61 through column 3, line 16).

Applicant discloses in the background of the invention that one end face of the honeycomb filter on the exhaust gas inlet side, a crisscross portion, which is a portion at which sealing material layer formed between the porous ceramic members intersect with each other, is likely to suffer from concentrated wind erosion due to exhaust gases (see page 2, lines 19-30) such that the crisscross portions may be interpreted as thermal impact zones.

It would have been obvious to try the specific structure of a segmented honeycomb filter wherein the crisscross portions of the sealing material layer are the thermal impact-relieving zones such that the width is of a thickness capable of releasing the thermal impact applied at that point for the predictable result of strengthening the honeycomb filter at its weakest point to prevent cracks.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a maximum width L of the crisscross portion of said sealing material layer is 1.5 to 3 times greater than a minimum width l (mm) of said sealing material layer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Regarding claim 2, Ohno et al discloses honeycomb filter wherein an outer circumferential face in the length direction has a curved face (see figure 13).

Regarding claim 3, Ohno et al does not disclose a honeycomb filter wherein said at least one crisscross portion of said sealing material layer includes a plurality of crisscross portions, in which a maximum width L of the crisscross portions of said sealing material layer is greater than the minimum width l of said sealing material layer.

However, Ohno et al discloses a honeycomb filter capable of meeting the limitation of said at least one crisscross portion of said sealing material layer includes a plurality of crisscross portions, in which a maximum width L of the crisscross portions of said sealing material layer is greater than the minimum width l of said sealing material layer.

Regarding claim 5, Ohno et al discloses a catalyst is applied to the porous ceramic member (see paragraph 0037).

Regarding claim 8, Ohno et al discloses a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross-sectional shape that is rectangular with a chamfered face formed at each corner (see figure 7 and paragraph 0022).

Regarding claim 9, Ohno et al discloses a honeycomb filter wherein the porous ceramic members are evenly aligned (see figure 7).

Regarding claim 10, Ohno et al discloses a honeycomb filter wherein the chamfered face is a curved surface and a size of the curved surface having a length R which satisfies the relationship

$$L = \sqrt{(1 + 2 \times R)^2 + l^2}$$

for L being 1.5 to 3 times greater than 1 (see paragraphs 0045, 0079, and -0082-0083).

Regarding claim 11, Ohno et al does not a honeycomb filter wherein the chamfered face is a flat surface having a length C which satisfies the relationship

$$L = \sqrt{(l + 2 \times C)^2 + l^2}$$

for L being 1.5 to 3 times greater than 1.

It would have been an obvious matter of design choice to have wherein the chamfered face is a flat surface having a length C which satisfies the relationship

$$L = \sqrt{(l + 2 \times C)^2 + l^2}$$

for L being 1.5 to 3 times greater than 1, since applicant has not disclosed that having wherein the chamfered face is a flat surface having a length C which satisfies the relationship

$$L = \sqrt{(l + 2 \times C)^2 + l^2}$$

for L being 1.5 to 3 times greater than 1 solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well wherein the chamfered face is a flat surface having a length C which satisfies the relationship

$$L = \sqrt{(l + 2 \times C)^2 + l^2}$$

for L being 1.5 to 3 times greater than 1.

Regarding claim 12, Ohno et al discloses wherein the porous ceramic members are offset from one another (see figure 9).

Regarding claim 13, Ohno et al discloses a honeycomb filter wherein the chamfered face is a curved surface and a size of the curved surface having a length R which satisfies the relationship

$$L = \sqrt{(1 + 2 \times R)^2 + l^2}$$

for L being 1.5 to 3 times greater than 1 (see paragraphs 0045, 0079, and -0082-0083).

Regarding claim 14, Ohno et al discloses a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross- sectional shape that is hexagonal with a chamfered face formed at each corner (see figure 12).

Regarding claim 15, Ohno et al discloses a honeycomb filter wherein the chamfered face has a length R which satisfies the relationship $L = l + R$ for L being 1.5 to 3 times greater than 1 (see paragraphs 0022, 0045, 0079, and 0082-0083).

Regarding claim 16, Ohno et al does not discloses a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross- sectional shape that is rhombic without a chamfered face formed at each comer.

It would have been an obvious matter of design choice to have a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross-sectional shape that is rhombic without a chamfered face formed at each comer, since applicant has not disclosed that having a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross- sectional shape that is rhombic without a chamfered face formed at each corner solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with

having a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross- sectional shape that is rhombic without a chamfered face formed at each comer.

Regarding claim 17, Ohno et al does not disclose a honeycomb filter wherein an angle a of each corner is an acute apex and satisfies the relationship

$$L = \frac{l}{\sin\alpha}\sqrt{2(1+\cos\alpha)}$$

for L being 1.5 to 3 times greater than 1.

It would have been an obvious matter of design choice to have a honeycomb filter wherein an angle a of each corner is an acute apex and satisfies the relationship

$$L = \frac{l}{\sin\alpha}\sqrt{2(1+\cos\alpha)}$$

for L being 1.5 to 3 times greater than 1, since applicant has not disclosed that having a honeycomb filter wherein an angle a of each corner is an acute apex and satisfies the relationship

$$L = \frac{l}{\sin\alpha}\sqrt{2(1+\cos\alpha)}$$

for L being 1.5 to 3 times greater than 1 solves an stated problem or is for any particular purpose and it appears that the invention would perform equally well with having a honeycomb filter wherein an angle a of each corner is an acute apex and satisfies the relationship

$$L = \frac{l}{\sin\alpha}\sqrt{2(1+\cos\alpha)}$$

for L being 1.5 to 3 times greater than 1.

Regarding claim 18, Ohno et al does not disclose a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross-sectional shape that is triangular without a chamfered face formed at each corner.

However, Ohno et al discloses a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross-sectional shape that is triangular with a chamfered face formed at each corner (see figure 11) and each of the plurality of columnar porous ceramic members without a chamfered face formed at each corner (se figures 3-5).

It would have been an obvious matter of design choice to have a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross-sectional shape that is triangular without a chamfered face formed at each corner, since applicant has not disclosed that having a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross-sectional shape that is triangular without a chamfered face formed at each corner, solves any stated problems or is for any particular purpose and it appears that the invention would perform equally well with having a honeycomb filter wherein each of the plurality of columnar porous ceramic members has a cross-sectional shape that is triangular without a chamfered face formed at each corner.

Regarding claim 19, Ohno et al discloses a honeycomb filter wherein each of the plurality of columnar porous ceramic members is $L = 2 \times l$ for L being 1.5 to 3 times greater than 1 (see paragraphs 0022, 0045, 0079, and 0082-0083).

Regarding claim 20, Ohno et al discloses a honeycomb filter wherein said at least one crisscross portion of said sealing material layer includes multiple crisscross portions in which a maximum width L of the crisscross portions of said sealing material layer is 1.5 to 3 times greater than the minimum width 1 of said sealing material layer for all crisscross portions (see figure 11 and paragraphs 002, 0045, 0079, and 0082-0083) where if six triangles are sealed to each other forming a hexagon there would be wherein said at least one crisscross portion of said sealing material layer includes multiple crisscross portions.

Claims 4 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al (EP 1 142 619 A1), Noda et al (US 6,395,370 B1), and admitted prior art in view of Fay, III et al (US 6,040,266).

Regarding claim 4, Ohno et al does not teach a honeycomb filter further comprising a catalyst supporting film is applied to the porous ceramic member.

However, Ohno et al teaches that a catalyst is carried on the honeycomb structure (see paragraph 0037), which may be made of cordierite (see paragraph 0036).

Fay, III et al teaches the use of a washcoat, or catalyst supporting film, on cordierite substrates (see column 2, lines 28-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Ohno et al with the teachings of Fay, III et al for increased surface area onto which the catalyst is applied.

Regarding claim 6, Ohno et al does not teach a catalyst supporting film is applied to the sealing material layer.

However, Ohno et al teaches that a catalyst is carried on the honeycomb structure (see paragraph 0037), which may be made of cordierite (see paragraph 0036).

Fay, III et al teaches the use of a washcoat, or catalyst supporting film, on cordierite substrates (see column 2, lines 28-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Ohno et al with the teachings of Fay, III et al for increased surface area onto which the catalyst is applied.

It would have been an obvious variation to apply the washcoat to the honeycomb filter assembly, since one could as easily coat the bonded members (assembly) as one could coat the separate members and then bond the members together.

Regarding claim 7, Ohno et al does not teach a catalyst is applied to the sealing material layer.

However, Ohno et al teaches a catalyst is applied to the porous ceramic member (see paragraph 0037).

It would have been an obvious variation to apply the catalyst, not only to the ceramic members, but also the sealing material that bond the members together for the predictable result of improved purification.

Response to Arguments

Applicant's arguments filed November 17, 2008 have been fully considered but they are not persuasive.

Applicant argues that Ohno et al does not disclose the sealing material layer includes at least one crisscross portion in which a maximum width L of the crisscross portion of said dealing material layer is 1.5 to 3 times greater than a minimum width l of the sealing material layer.

The examiner disagrees.

Ohno et al discloses the sealing material layer has a thickness of t1 (see figure 5), which can be 100 mm or shorter (see paragraph 0079) such that the maximum width is 1.414 times greater than the minimum width. However, if the honeycomb (F1) is curved with a curvature (R) the maximum width is increased but the curvature (R) is from 0.3 to 2.0 (see paragraphs 0082-0084 and figure 8) such that Ohno et al discloses the claimed range.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Inoue et al (US 6,159,431).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./
Examiner, Art Unit 1797

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797